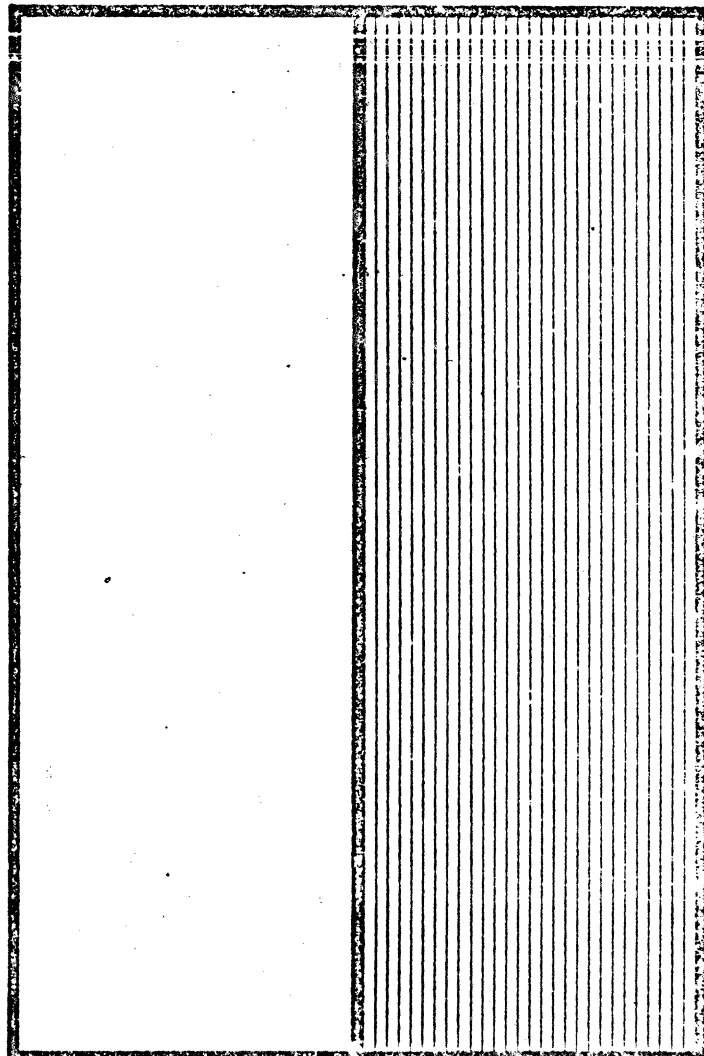


UNIVAC 9400 SYSTEM

PROGRAM DESCRIPTION DRAWING



CUSTOMER
ENGINEERING

409169

SPERRY RAND



DRAWING NO. 4091696

REVISION C

CUSTOMER ENGINEERING
PRODUCT DIAGNOSTIC SOFTWARE

9400 - 5024/8414 DISC PREP - D4090

	SIGNATURE	TITLE	DATE
APPROVAL	_____	<u>Manager</u>	_____
APPROVAL	_____	<u>Supervisor</u>	_____
APPROVAL	_____	<u>Programmer</u>	_____
APPROVAL	_____	<u>Programmer</u>	_____

REVISION STATISTICS RECORD

DWG REV	MSTR REV	RELEASE DATE	DESIGNER NAME	EIR NUMBER	FCO NUMBER
C	M	11/1/72	PDS Phila., Pa.	C12606	

REVISION DESCRIPTION RECORD

REV	DESCRIPTION	UD #
C	Provide a cross reference between factory and Customer Engineering diagnostics. Provide the latest enhancements requested by Customer Engineering along with the latest factory testing techniques. Special use of V6 in tests 4 & 5.	QDZ

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1. INTRODUCTION

1.1 Purpose. This document describes a 9400 Maintenance Test Program for the 5024/8414 Disc Subsystem.

1.2 Major Objectives. The purpose of this program is to write a Home Address and Track Descriptor Record on each track of an 8414 Disc Handler.

1.3 Equipment Configurations. All equipment configurations must be connected to a Selector I-O channel of the 9400 processor. This test will operate the following equipment configuration:

- Disc File Control - Type 5024.
- Disc Drive - Type 8414.
- Disc Pack Assembly - Type F1214.

1.4 Associated Software. This program has DSKH included as an integral part of the program. This is the standard disc handler routine used by all Disc Maintenance test programs. It is the interface between the program and MCR, which performs program load, parameterization, execution, I-O handling, and message handling.

1.5 Reference Documents.

<u>DRAWING</u>	<u>REVISION</u>	<u>DESCRIPTION</u>
S70040	A	UNIVAC 9400 Processor, Type 3019-00 and -01.
--	-	UNIVAC 9400 Dual I-O Selector Channel, Type XXXX-00 and -01.
P10076	A	Disc File Control, Type 5024.
P21109	-	8414 Disc File.
4091622	-	Maintenance Control Routine.
4091623	-	Parameter and Message Routines.
3844459	-	5024/8414 Disc Program Handler.

2. FUNCTIONAL DESCRIPTION

2.1 General Organization. This program is divided into two parts, one which writes Home Address and Track Descriptor Record on preselected tracks and another which declares a preselected track as defective and assigns another preselected track as the alternate track.

2.2 Program Description

2.2.1 Test 1 (Group Test)

This test if selected, will run only test 2, since test 2 and 3 will not be run together.

2.2.2 Test 2

Objective - This program writes a Home Address and a Track Descriptor Record on the tracks specified by test parameters.

Method - The starting and ending track number can be any track. The format of the data is as follows: *Note: Modified use of V17 for Test 2, Refer to Sec 4.3*

Home Address -

Flag Byte - 0 0

Cylinder Number - 0 0 C C

Head Number - 0 0 H H

Track Descriptor Record -

Cylinder Number - 0 0 C C

Head Number - 0 0 H H

Record Number - 0 0

Key Length - 0 0

Data Length - 0 0 0 8

Data Field - 0 0 C C 0 0 H H 0 0 0 E 2 9 0 0

After writing the HA - TD records as specified, the program will read them back and check against what was written. Any miscompare causes an error printout.

2.2.3 Test 3

The second part of the program gives the operator the ability to designate a track as defective and assign an alternate track in its place. The defective primary track number and the alternate track number are keyed in by the operator. The program reads the Home Address of the alternate track and checks the flag byte. If the flag byte indicates that the alternate track is bad or has been assigned previously, a message is printed. A new alternate track will have to be selected and the program rerun. If the flag byte of the alternate track is zero, the program will rewrite the Home Address and Track Descriptor Records of the alternate track and the defective primary track. These records will be written with the following format:

Alternate Track

Home Address

Flag Byte - 01

Cylinder Number - 00C^AC^A

Head Number - 00H^AH^A

} Alternate Track Address

NOV 1 1970

2.2.3 continued . . .

Track Descriptor Record (RO)

Cylinder Number - 00C_PC_P

Primary Track Address

Head Number - 00H_PH_P

Record Number - 00

Key Length - 00

Data Length - 0008

Data Field - 00C_AC_A00H_AH_A000E2900

Defective Primary Track

Home Address

Flag Byte - 02

Cylinder Number - 00C_PC_P

Primary Track Address

Head Number - 00H_PH_P

Track Descriptor Record (RO)

Cylinder Number - 00C_AC_A

Alternate Track Address

Head Number - 00H_AH_A

Record Number - 00

Key Length - 00

Data Length - 0008

Data Field - 00C_PC_P00H_PH_P000E2900

2.2.4 Test 4 - Fixed Pattern Surface Analysis

V6/XX ZZ/ZZ ZZ will allow selection of four test patterns.

V6/XX ZZ/ZZ 01 will allow selection of three test patterns.

V6/XX ZZ/01 XX will allow selection of two test patterns.

V6/XX 01/XX XX will allow selection of one test pattern.

where: XX is any hexadecimal character

ZZ is any hexadecimal character other than 01. The 01 code will terminate the pattern selected.

If V6 is omitted, the program uses the following patterns one at a time:

FF 00 AA E5

Performs a complete surface analysis and flags defective tracks. Alternate tracks are not assigned.

2.2.5 Test 5 - Shifting Pattern Surface Analysis

V6/XX XX/ZZ ZZ will allow any two byte pattern XXXX to be shifted ZZZZ (hexadecimal) number of times.

If V6 is omitted, the two byte pattern FF00 will be shifted 8 times.

3. OPERATING PROCEDURES

The Disc Handler Routine DSKH is used as a standard interface between the program and MCR. All operating procedures described in the DSKH documentation hold equally well for this program. See PDD 3844459.

3.1 Initialization. See DSKH documentation.

3.2 Test Program Parameters. See DSKH documentation. The program is called by typing the name D4090.

3.2.1 In addition to the normal parameters, it is necessary to enter a parameter to enable writing on the disc in test 2. This parameter is V17/D00000000. If this parameter is not entered, only reading and comparing will occur in test 2.

3.2.2 As in the other test programs, the starting cylinder and track address for testing set to 00500000. If the entire disc is to be written, parameter V15/CC/hh must be entered where cc = cylinder number and hh = head number; both in decimal.

3.2.3 The defective and alternate track numbers in test 3 are entered by typing in parameters V15/CC/hh and V16/CC/hh respectively.

3.3 Test Program Messages. The DSKH documentation describes all test entry and exit messages and a standard I-O error message. Data errors are detected by the program, and all data error messages are contained in the program.

3.3.1 Test 2

In addition to the error messages printed by the handler, test 2 can type the following on the console:

```
HA - TD READ COMPARE ERROR
EXPECTED X-----X
READ      X-----X
```

where X-----X are the home address and track descriptor records.

3.3.2 Test 3

An additional message is:

```
ALTERNATE TRACK CHOSEN IS BAD OR BEING USED CHOOSE NEW ALTERNATE TRACK
AND RERUN
```

4. SUPPLEMENTARY DATA

4.1 Supplementary Software Information. Each test of the program is entered separately by DSKH and stands alone. It could be extracted from the rest of the program and either be eliminated or assembled by itself with DSKH.

4.2 Supplementary Hardware Information. See DSKH documentation.

4.3 Modified Use of V17 for Test 2. Modified use of V17 parameter. If V17/D0000000 is entered, then all home address and track descriptor records are written. If V17/E0000000 is entered, then previously flagged defective tracks are left as is. This removes the need for another surface analysis on a previously flag disc.

V17/E0 will save previously flagged defective and alternate tracks.

V17/XX will re-prep all tracks (where XX is any hexadecimal character).

It is no longer necessary to use the full eight characters on the V17 option. Only the first two are necessary.

4.4 R2 (Used in Test 3 & 4)

On a Read Compare Error which occurs in a subtest (3 & 4) and is not part of a general error message, R2 may be used to flag a track defective and continue on with the subtest.